labeling substance **93**, and a second binding substance **95** which binds to the second linker **96**. In the labeled form **90***b*, a plurality of complexes containing the labeling substance **93** and the second linker **96** are linked to the second binding substance **95**.

2. Oxidation Reduction Current/Electrochemiluminescence Detection Method

[0148] Subsequently, the oxidation reduction current/electrochemiluminescence detection method will be explained.

[0149] Referring to FIG. **9**, the oxidation reduction current/electrochemiluminescence detection method according to the present embodiment is largely different from the photoelectrochemical detection method in that a labeling substance which generates oxidation reduction current when a voltage is applied or a labeling substance which emits light when a voltage is applied is used as the labeling substance **193** in the labeling process [see the labeling process of FIG. **9**C], and a voltage is applied to the working electrode **60** and the light generated from the labeling substance **193** is detected in the detection process [see the detection process of FIG. **9**D]. Therefore, the process of supplying a sample [see the process of supplying a sample of FIG. **9**A] and the process of trapping an analyte [see the process of trapping an analyte of FIG. **9**B] are the same as those in the photoelectrochemical detection method. The detector **1** which is used in the method for electrochemically detecting an analyte according to the present embodiment does not include the light source **13** and includes a sensor for detecting light generated from the labeling substance. In the detection chip **20** to be used in the method for electrochemically detecting an analyte according to the present embodiment, the working electrode **60** is composed of a conductive material.

[0150] In the labeling process, the user injects the label binding substance **190** into the detection chip **20** from the sample inlet **30***b* to allow the label binding substance **190** to be bound to the analyte S trapped on the working electrode body **61** [see the labeling process of FIG. **9**C]. In the labeling process, a complex containing the trapping substance **81**, the analyte S, and the label binding substance **190** is formed on the working electrode body **61**.

[0151] The label binding substance **190** is formed of a polypeptide support **91**, a first binding substance **92** to be bound to the analyte S, a labeling substance **193**, and a first linker **94**. In the label binding substance **190**, the first binding substance **92** to be bound to the analyte S and the first linker **94** are directly immobilized on the surface of the polypeptide support **91**. The labeling substance **193** is immobilized on the polypeptide support **91** via the first linker **94**.

[0152] The labeling substance **193** is a labeling substance which emits light when a voltage is applied.

[0153] Examples of the labeling substance which emits light when a voltage is applied include luminol, lucigenin, pyrene, diphenylanthracene, and rubrene.

[0154] The luminescence of the labeling substance can be enhanced, for example, by using luciferin derivatives such as firefly luciferin and dehydro luciferin, enhancers such as phenols such as phenylphenol and chlorophenol or naphthols.

[0155] In the oxidation reduction current/electrochemiluminescence detection method for an analyte according to the present embodiment, as the labeling substance **193**, a labeling substance which generates oxidation reduction current when a voltage is applied may be used in place of the labeling substance which emits light when a voltage is applied.

[0156] Examples of the labeling substance which generates oxidation reduction current when a voltage is applied include metal complexes containing metal which causes an electrically reversible oxidation-reduction reaction as a central metal. Examples of the metal complexes include tris(phenanthroline) zinc complex, tris(phenanthroline) ruthenium complex, tris(phenanthroline) cobalt complex, di(phenanthroline) zinc complex, di(phenanthroline) ruthenium complex, di(phenanthroline) cobalt complex, bipyridine platinum complex, terpyridine platinum complex, phenanthroline platinum complex, tris(bipyridyl) zinc complex, tris(bipyridyl) ruthenium complex, tris(bipyridyl) cobalt complex, di(bipyridyl) zinc complex, di(bipyridyl) ruthenium complex, and di(bipyridyl) cobalt complex.

[0157] In the oxidation reduction current/electrochemiluminescence detection method for an analyte according to the present embodiment, the polypeptide support **91**, the first binding substance **92**, and the first linker **94** are the same as those in the photoelectrochemical detection method.

[0158] Subsequently, the detection process is performed [see the detection process in FIG. **9**D].

[0159] In the detection process, the user first injects an electrolytic solution through the sample inlet **30***b* of the detection chip **20**. Thereafter, the user inserts the detection chip **20** into the chip insertion unit **11** of the detector **1** shown in FIG. **1**. Then, the user gives an instruction to start measuring to the detector **1**. Here, the electrode leads **71**, **72**, and **73** of the detection chip **20** inserted into the detector **1** are connected to the ammeter **14** and the power source **15**. Then, a voltage is applied to the working electrode **60** by the power source **15** of the detector **1**. Thus, the labeling substance **193** is excited to generate light. In the measurement of light based on the labeling substance **193**, a photon counter is used. In this case, the light can be indirectly detected by using an optical fiber electrode obtained by forming a transparent electrode at the distal end of an optical fiber in place of the electrode (see U.S. Pat. No. 5,776,672 and U.S. Pat. No. 5,972,692).

[0160] Thereafter, a light value digitally converted by the A/D converting unit **16** is input into the control unit **17**. Then, the control unit **17** estimates the amount of the analyte in the sample from the digitally converted current value based on a calibration curve indicating a relationship between a light value created in advance and the amount of the analyte. The control unit **17** creates a detection result screen for displaying the information on the estimated amount of the analyte on the display **12**. Thereafter, the detection result screen created by the control unit **17** is sent to the display **12** so as to be displayed on the display **12**.

[0161] In the oxidation reduction current/electrochemiluminescence detection method for an analyte according to the present embodiment, from the viewpoint of suppressing the generation of noises due to contaminants, the user may discharge a remaining liquid containing contaminants from the sample inlet **30***b* of the detection chip **20** after the process of trapping an analyte and wash an inside of the detection chip **20**. In the washing of the inside of the detection chip **20**, organic solvents such as a buffer (particularly a buffer containing a surfactant); purified water (particularly purified water containing a surfactant); and ethanol can be used.

[0162] In the oxidation reduction current/electrochemiluminescence detection method for an analyte according to the present embodiment, from the viewpoint of removing free label binding substance **190** which is not bound to the analyte S and improving the detection accuracy, the process of wash-